



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,267	03/07/2002	Hironobu Ishikawa	Q68736	6535

7590

10/06/2003

SUGHRUE MION, PLLC  
2100 Pennsylvania Avenue, NW  
Washington, DC 20037-3213

EXAMINER

DAVIS, DAVID DONALD

ART UNIT

PAPER NUMBER

2652

DATE MAILED: 10/06/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/090,267

Applicant(s)

ISHIKAWA ET AL.

Examiner

David D. Davis

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.                      6) ☐ Other: .

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

2. Receipt is acknowledged of the Information Disclosure Statement (IDS) received March 7, 2002.

***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Jabbar et al (US 5,283,491). As per claims 1 and 15, Jabbar et al shows in figures 2, 3 and 9 a ceramic dynamic-pressure bearing including a first member 25 formed of ceramic (see column 7, lines 23-42) and having a cylindrical outer surface. A second member 42 formed of ceramic and

Art Unit: 2652

having a cylindrical reception hole formed is shown in figures 2 and 3 of Jabbar et al. The first member 25 is inserted into the reception hole of the second member 42 in such a manner as to be rotatable, relative to the second member 42, about an axis. Thrust plates 43 & 44 formed of ceramic face at least one end face of the second member 42 as viewed along the axis of rotation. The end face of the second member 42 and a face of the thrust plate 43 & 44 in opposition to the end face serve as thrust dynamic-pressure gap definition surfaces to define a thrust dynamic-pressure gap 48 therebetween. The ceramic dynamic-pressure bearing satisfies at least one of the following requirements:

(iv) the thrust dynamic-pressure gap definition surface of the second member 42 which faces the thrust plate 43 & 44 is crowned such that an inner circumferential portion thereof projects by an amount greater than  $0\text{ }\mu\text{m}$  and not greater than  $2.5\text{ }\mu\text{m}$  with respect to an outermost circumferential portion thereof; *(Note: since the surfaces are at an angle, which gradually increases, the surfaces meet the aforementioned requirements.)*

(v) the thrust dynamic-pressure gap definition surface of the thrust plate 43 & 44 which faces the second member 42 is crowned such that an inner circumferential portion thereof projects by an amount greater than  $0\text{ }\mu\text{m}$  and not greater than  $2.5\text{ }\mu\text{m}$  with respect to an outermost circumferential portion thereof; or *(Note: since the surfaces are at an angle, which gradually increases, the surfaces meet the aforementioned requirements.)*

(vi) a clearance between the mutually facing thrust dynamic-pressure gap definition surfaces of the second member 42 and the thrust plate 43 & 44 is greater than  $0\text{ }\mu\text{m}$  and not greater than  $2.5\text{ }\mu\text{m}$  as measured at outermost circumferential portions of the thrust dynamic-pressure gap definition surfaces. (See column 7, lines 48-50)

As per claims 2 and 16, Jabbar et al shows in figures 2 and 3 an inner surface of the reception hole of the second member 42 and an outer circumferential surface of the first member 25 to be

Art Unit: 2652

received inside the inner surface serve as radial dynamic-pressure gap definition surfaces, which define a radial dynamic-pressure gap 14 & 18 therebetween.

As per claims 14 and 28, Jabbar et al shows in figure 9 dynamic-pressure grooves 51 formed on at least one of the radial dynamic-pressure gap definition surfaces and the thrust dynamic-pressure gap definition surfaces.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 3-13 and 17-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jabbar et al (US 5,283,491) in view of NIST Property Data Summaries. Jabbar et al discloses the claimed invention see description, supra. However, Jabbar et al is silent as to a specific ceramic being used such as alumina.

Art Unit: 2652

NIST discloses an alumina ceramic including ceramic crystal grains which contains an Al component in an amount of 90-99.5% by mass as reduced to  $\text{Al}_2\text{O}_3$  and an oxide-type sintering aid component in an amount of 0.5-10% by mass as reduced to an oxide thereof. NIST also discloses that the alumina ceramic has an apparent density of 3.5-3.9 g/cm<sup>3</sup>. NIST also discloses that the alumina ceramic has a relative density of not less than 90%. NIST additionally discloses that the ceramic crystal grains have an average grain size of 1-7  $\mu\text{m}$ . NIST further discloses that ceramic crystal grains having a grain size of 2-5  $\mu\text{m}$  occupy an area percentage of not less than 40.

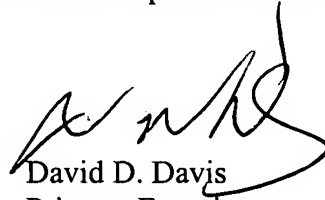
It would have been obvious to a person having ordinary skill in the art at the time the invention was made to specify that the ceramic of Jabbar et al was alumina with notoriously well known properties as taught by NIST. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to specify that a ceramic was alumina with notoriously well known properties because alumina is easily obtainable, readily available hard, heat and corrosion resistant material.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503. The examiner can normally be reached on Mon., Tues., Thurs. and Fri. between 7:30-6:00. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Art Unit: 2652

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900. Any other inquiry should be directed to the customer service center whose telephone number is (703) 306-0377.



David D. Davis  
Primary Examiner  
Art Unit 2652

ddd  
September 16, 2003